



A robust tilapia genetically selected for high survival in aquaculture

Following more than 33 generations of selective breeding using state-of-the-art technologies, the GenoMar tilapia (*Oreochromis niloticus*) has been recognised as the most advanced and genetically improved tilapia world-wide.

GenoMar STRONG is a genetically selected strain of tilapia with first-class health and survival traits, supported by good growth and fillet yield traits.

High performance

GenoMar STRONG's high performance, significantly reducing production costs and environmental impacts, contribute to better productivity and capacity utilization.

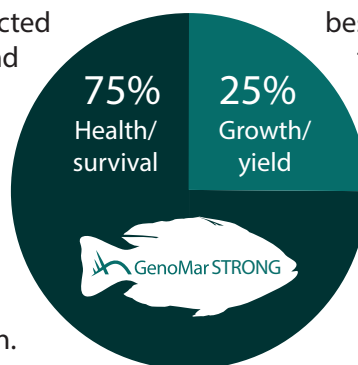
The extra high survival rate of GenoMar STRONG is based on selection for general robustness and specific disease resistance, such as infections caused by *Streptococcus*, *Flavobacterium*, and *Francisella*.

Increased survival reflects improved health and better animal welfare.

Predictable biological achievements ensured by genomic selection and line breeding

GenoMar STRONG is made by a crossbreed of the best genomic selected females and males from two different health and survival lines, respectively.

The weighting of the traits is 75% on health and survival and 25% on growth and yield from these parental lines in the offspring delivered to the farmers. The fingerlings/juveniles are expected to surpass the performance of the parental lines.



Biosecure production

To deliver disease-free fingerlings and juveniles to the farmers, GenoMar STRONG is produced in facilities that maintain high standards of biosecurity. This leads to a more predictable, healthier, and sustainable tilapia production.

Proof of performance



Resistance to streptococcosis

GenoMar STRONG has been tested in laboratory trials and demonstrated a level of protection against *Streptococcus agalactiae* of 42% and 25% when challenged through two different routes of infections (Figure 1). Resistance to infections caused by *Flavobacterium* and *Francisella* are also included in the GenoMar breeding program.



Increased survival throughout the life of the fish

GenoMar STRONG has proven lower mortality under commercial farming conditions in a field trial in Malaysia. 135 days post-transfer to grow-out in cages, the cumulative mortality was on average 29.6% for GenoMar STRONG and 43.4% for non-selected GenoMar tilapia. The level of protection was 32%, which verifies the laboratory tests results (Figure 2).

Animal welfare

The high survival rate of GenoMar STRONG reflects improved animal welfare through reduced mortality and enhanced health.



Growth and yield

GenoMar STRONG is 25% weighted for growth and fillet yield traits. However, the GenoMar STRONG's ancestors have been selected for these traits in previous generations. This means that the already good growth and yield traits accumulated are kept in GenoMar STRONG as well.



Improved profitability

Based on the field results from Malaysia, an economical evaluation was performed. In the cages and ponds where *Streptococcus*-related mortality was low (1-5%), the tilapia aquaculture was found to be profitable, even considering the higher purchasing cost of GenoMar STRONG. More details about these findings are published here: <https://www.nature.com/articles/s41598-022-12649-9>

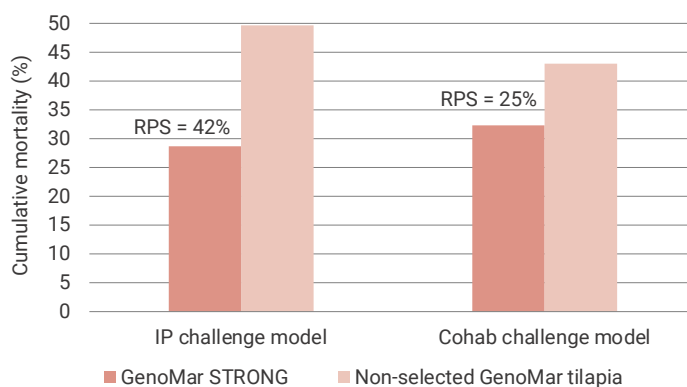


Figure 1. Cumulative mortality in a laboratory challenge test of tilapia fingerlings selected for streptococcosis resistance compared to non-selected tilapia. Two different routes of infections with *S. agalactiae* were performed. Level of protection is calculated as relative percent survival (RPS).

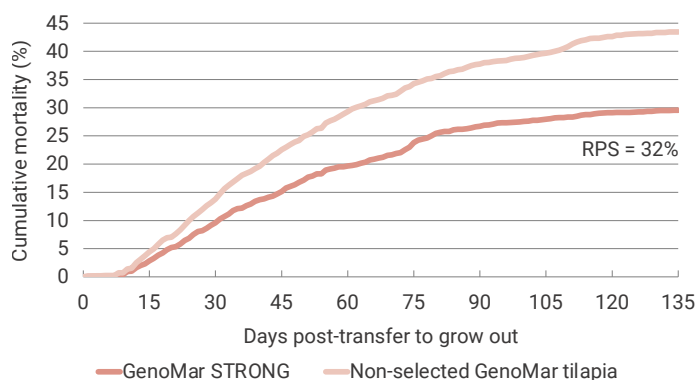


Figure 2. Daily, cumulative mortality in a field trial with tilapia selected for streptococcosis resistance and non-selected tilapia, 135 days post-transfer to grow out. Both groups consisting of around 2000 fish each, were mixed, individually tagged, and raised together in cages at a commercial farm in Malaysia. Level of protection is calculated as relative percent survival (RPS).